



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,602	04/01/2004	Takashi Shirakawa	023971-0394	5890
22428	7590	10/13/2005	EXAMINER	
FOLEY AND LARDNER LLP			NAGY, MARC I	
SUITE 500			ART UNIT	
3000 K STREET NW			PAPER NUMBER	
WASHINGTON, DC 20007			3748	

DATE MAILED: 10/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/814,602

Applicant(s)

SHIRAKAWA ET AL.

Examiner

Marc I. Nagy

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☒ Claim(s) 16 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 08312005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 04/01/2004 is acknowledged. The submission is in compliance with the provisions of 37 CFR 1.97 and 1.98. Accordingly, the information disclosure statement is being considered by the examiner.

Specification

The disclosure is objected to because of the following informalities:

3. On page 7, line 30, the reference for "fuel injector" should be "12".
4. On page 11, line 32, "obtain" should be "obtaining".
5. On page 15, line 24, "Ture" should be "True".
6. On page 17, line 17, "DPF" should be "DPF 18".
7. On page 20, line 4, the reference for "control unit" should be "30".

Appropriate correction is required.

Claim Objection

8. Regarding claim 16, the word "means" must be followed by "for".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 3748

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-11, 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Shimizu et al (U.S. Patent No. 5,279,116).

Shimizu et al discloses a device for determining deterioration of a catalytic converter for an engine. In regard to claims 1, 6, 9, 11, 13, 16 Shimizu discloses an exhaust-aftertreatment-apparatus diagnosis system having an exhaust aftertreatment apparatus (three-way reducing and oxidizing catalytic converter 12) disposed in an exhaust passage of the engine (internal combustion engine 1), a first exhaust ambience detector disposed upstream (upstream O₂ sensor 13), a second exhaust ambience detector disposed downstream (downstream O₂ sensor 15), a first section diagnosing a deterioration on the basis of the first and second ratios (see column 14, lines 59-63), and a second section diagnosing a deterioration on the basis of the first and second ratios (see column 14, lines 64-68). In regard to claim 2, Shimizu teaches the first section diagnosing a deterioration when the engine operating condition is changed from a lean burn operation to a rich burn operation or from the rich burn operation to the lean burn operation (see column 5, lines 62-65). In regard to claim 3, Shimizu discloses a first deterioration diagnosing section comprising an integral section for calculating an integral quantity of a difference between an output of the first exhaust ambience detector and an output of the second exhaust ambience detector between variations and the deterioration diagnosis is based on the integral quantity (see column 4, lines 3-11, column 11, line 25 to column 12, line 11 and column 18, lines 49-55). In regard to

Art Unit: 3748

claims 4 and 8, Shimizu discloses the second deterioration diagnosis via transiting the engine operation to a stoichiometric air/fuel ratio operating condition and a stoichiometric air/fuel ratio control (see column 1, lines 18-27 and column 10, lines 8-16). In regard to claim 5, Shimizu discloses the second deterioration diagnosing section comprising an exhaust air/fuel ratio feedback controlling section on the basis of the output of the second exhaust ambience detector and a section for measuring a cycle of a feedback quantity (see column 8, lines 53-68). In regard to claim 7, Shimizu discloses the engine operating condition temporally varied from a lean burn operation to a rich burn operation (see column 4, lines 15-22, column 5, lines 62-68, column 7, lines 8-11, column 8, lines 18-22). In regard to claim 10, Shimizu discloses a diagnosis system wherein the first exhaust aftertreatment deterioration diagnosis is based on the first and second ratios obtained after an operation for temporally varying the engine operating condition from a lean burn condition to a rich burn condition (see column 7, lines 8-11). In regard to claim 14, Shimizu discloses a diagnosis system wherein the first deterioration diagnosis is based on the change of a catalyst downstream side air/fuel ratio relative to a change of a catalyst upstream side air/fuel ratio during a rich spike control, and the second deterioration diagnoses from an inversion cycle of a feedback quantity during the feedback control of the catalyst downstream side air/fuel ratio during a stoichiometric control when the first deterioration diagnosis made a deterioration determination (see column 17, line 45 to column 18, line 4). In regard to claim 15, Shimizu discloses a method of diagnosing an exhaust aftertreatment apparatus for an internal combustion engine, the method comprising detecting a first ratio, detecting a

second ratio, executing a first diagnosis on the basis of the first and second ratios under a first engine operating condition, executing a second diagnosis on the basis of the first and second ratios under a second engine operating condition when the first deterioration diagnosing section diagnoses that the exhaust aftertreatment apparatus is deteriorated (see column 16, line 47 to column 17, line 12).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu as applied to claims 1-11, 13-16 above, in view of Allansson et al (U.S. Patent Application Publication No. US2002/0046562 A1). Shimizu et al discusses the claimed invention except for the diesel particulate trap disposed downstream of the NO_x trap catalyst. Allansson teaches an emissions control device with an exhaust system comprising a diesel particulate trap (5b) disposed downstream of a NO_x trap catalyst

(5a) (see page 2, column 2, lines 21-29). It would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the exhaust system of Shimizu with a diesel particulate trap disposed downstream of a NO_x trap catalyst to enhance the emissions control effectiveness of the exhaust system while preserving the functionality of the exhaust aftertreatment apparatus diagnosis system.

11. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu as applied to claims 1-11, 13-16 above, and further in view of Akama et al (U.S. Patent Application Publication No. US2002/0053202 A1). Shimizu et al discusses the claimed invention except for the diesel particulate trap disposed downstream of the NO_x trap catalyst. Akama teaches an emissions control device with an exhaust system comprising a diesel particulate trap disposed downstream of a NO_x trap catalyst (see page 2, column 1, lines 8-24). It would have been obvious to one having ordinary skill in the art at the time the invention was made to manufacture the exhaust system of Shimizu with a diesel particulate trap disposed downstream of a NO_x trap catalyst to enhance the emissions control effectiveness of the exhaust system while preserving the functionality of the exhaust aftertreatment apparatus diagnosis system.


12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc I. Nagy whose telephone number is 571-272-2758. The examiner can normally be reached on Monday - Friday 8 a.m. - 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on 571-272-4859. The fax phone

Art Unit: 3748

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


THOMAS DENION
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700